

This model was tested in **Cura 3.2.1** and printed on an **Ultimaker 2** in **PLA material**.

To avoid printing problems, we recommend the following settings:

### **Quality**

Layer Height: 0.1 mm

Initial Layer Height: 0.3 mm

Line Width: 0.4 mm

Wall Line Width: 0.4 mm

Outer Wall Line Width: 0.4 mm

Inner Wall(s) Line Width: 0.4 mm

Top/Bottom Line Width: 0.4 mm

Infill Line Width: 0.4 mm

Skirt/Brim Line Width: 0.4 mm

Initial Layer Line Width: 100%

### **Shell**

Wall Thickness: 0.8 mm

Wall Line Count: 2

Outer Wall Wipe Distance: 0.2 mm

Top Surface Skin Layers: 0

Top/Bottom Thickness: 0.8 mm

Top Thickness: 0.8 mm

Top Layers: 8

Bottom Thickness: 0.8 mm

Bottom Layers: 8

Top/Bottom Pattern: Lines

Bottom Pattern Initial Layer: Lines

Top/Bottom Line Directions: [ ]

Outer Wall Inset: 0 mm

Compensate Wall Overlaps: Check

Compensate Outer Wall Overlaps: Check

Compensate Inner Wall Overlaps: Check

Fill Gaps Between Walls: Everywhere

Filter Out Tiny Gaps: Check

Horizontal Expansion: 0 mm

Initial Layer Horizontal Expansion: 0 mm

Z Seam Alignment: Sharpest Corner

Seam Corner Preference: Hide Seam

Ignore Small Z Gaps: Check

Extra Skin Wall Count: 1

### **Infill**

Infill Density: 20%  
Infill Line Distance: 4.0 mm  
Infill Pattern: Grid  
Infill Line Directions: [ ]  
Infill X Offset: 0 mm  
Infill Y Offset: 0 mm  
Infill Overlap Percentage: 10%  
    Infill Overlap: 0.04 mm  
Skin Overlap Percentage: 5%  
    Skin Overlap: 0.02 mm  
Infill Wipe Distance: 0.1 mm  
Infill Layer Thickness: 0.1 mm  
Gradual Infill Steps: 0  
Infill Before Walls: Check  
Minimum Infill Area: 0 mm<sup>2</sup>  
Skin Removal Width: 0.8 mm  
    Top Skin Removal Width: 0.8 mm  
    Bottom Skin Removal Width: 0.8 mm  
Skin Expand Distance: 0.8  
    Top Skin Expand Distance: 0.8  
    Bottom Skin Expand Distance: 0.8  
Maximum Skin Angle for Expansion: 90°  
    Minimum Skin Width for Expansion: 0.0

## **Material**

Enable Retraction: Check  
Retraction Extra Prime Amount: 0 mm<sup>3</sup>  
Retraction Minimum Travel: 0.8 mm  
Maximum Retraction Count: 90  
Minimum Extrusion Distance Window: 6.5 mm  
Nozzle Switch Retraction Distance: 16 mm  
Nozzle Switch Retraction Speed: 20 mm/s  
    Nozzle Switch Retract Speed: 20 mm/s  
    Nozzle Switch Prime Speed: 20 mm/s

## **Speed**

Print Speed: 45 mm/s  
    Infill Speed: 50 mm/s  
    Wall Speed: 22.5 mm/s  
        Outer Wall Speed: 22.5 mm/s  
        Inner Wall Speed: 45 mm/s  
    Top/Bottom Speed: 15 mm/s  
Travel Speed: 120 mm/s

Initial Layer Speed: 30 mm/s  
Initial Layer Print Speed: 30 mm/s  
Initial Layer Travel Speed: 60 mm/s  
Skirt/Brim Speed: 30 mm/s  
Maximum Z Speed: 0 mm/s  
Number of Slower Layers: 2

### **Travel**

Combing Mode: All  
Avoid Printed Parts when Traveling: Check  
Travel Avoid Distance: 0.625 mm  
Layer Start X: 0.0 mm  
Layer Start Y: 0.0 mm

### **Cooling**

Enable Print Cooling: Check  
Fan Speed: 100%  
Regular Fan Speed: 100%  
Maximum Fan Speed: 100%  
Regular/Maximum Fan Speed Threshold: 10 s  
Initial Fan Speed: 0%  
Regular Fan Speed at Height: 0.3 mm  
Regular Fan Speed at Layer: 2  
Minimum Layer Time: 5 s  
Minimum Speed: 10 mm/s

### **Support**

Generate Support: Check  
Support Placement: Everywhere  
Support Overhang Angle: 60°  
Support Pattern: Zig Zag  
Connect Support ZigZags: Check  
Support Density: 15 %  
Support Line Distance: 1.3333 mm  
Support Z Distance: 0.3 mm  
Support Top Distance: 0.3 mm  
Support Bottom Distance: 0.3 mm  
Support X/Y Distance: 0.7 mm  
Support Distance Priority: Z overrides X/Y  
Minimum Support X/Y Distance: 0.2 mm  
Support Stair Step Height: 0.3 mm  
Support Stair Step Maximum Width: 5.0 mm  
Support Join Distance: 2.0 mm

Support Horizontal Expansion: 0.2 mm  
Support Infill Layer Thickness: 0.1 mm  
Use Towers: Check  
Tower Diameter: 3.0 mm  
Minimum Diameter: 3.0 mm  
Tower Roof Angle: 65°

### **Build Plate Adhesion**

Build Plate Adhesion Type: Brim  
Skirt/Brim Minimum Length: 250 mm  
Brim Width: 8.0 mm  
Brim Line Count: 18  
Brim Only on Outside: Check

### **Mesh Fixes**

Union Overlapping Volumes: Check  
Merged Meshes Overlap: 0.15 mm

### **Special Modes**

Print Sequence: All at Once  
Surface Mode: Normal

### **Experimental**

Slicing Tolerance: Middle  
Maximum Resolution: 0.01 mm  
Flow rate compensation max extrusion offset: 0 mm  
Flow rate compensation factor: 100%

Disclaimer: This model will look outstanding if printed on SLA/SLS 3D printer. The accuracy of the model printed on FFF printer can vary from the result shown in the pictures.